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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/998,250
Filing Date: November 30, 2001
Appellant(s): DEDHAR ET AL.

Pamela Sherwood
Bozicevic, Field and Francis LLP
1900 University Avenue Suite 200
East Palo Alto, CA 94303
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 10, 2007 appealing from the Office action mailed February 6, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,378,725 BONJOUKLIAN et al. 1-1995

Zhang et al., "Up-regulation of phosphatidylinositol 3-kinase in psoratic lesion, 1999, Chinese Medical Journal, vol. 112 (12), pages 1097-1100

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Scope of Small Organic Molecule

Claims 1 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the ILK inhibitor compounds of US Patent 6214813, wortmannin, LY294002, and MC-5 does not reasonably provide enablement for "...wherein said ILK inhibitor is a small organic molecule...". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The instant specification fails to provide information that would allow the skilled artisan to practice the instant invention without undue experimentation. Attention is directed to *In re Wands*, 8 USPQ2d 1400 (CAFC 1988) at 1404 where the court set forth the eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing *Ex parte Forman*, 230 USPQ 546 (BdApls 1986) at 547

the court recited eight factors: (1) the nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the ad; (4) the predictability or unpredictability of the ad; (5) the breadth of the claims', (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

(1) The Nature of the Invention:

The rejected claims are drawn to "A method for treating chronic inflammation, the method comprising: topically administering an effective amount of an inhibitor of integrin linked kinase (ILK) wherein said ILK inhibitor is a small organic molecule that specifically inhibits ILK activity".

(2) Breadth of the Claims:

The breadth of the claims are exceptionally broad encompassing any "...small organic molecule..." examples could include methane, ethane, ethanol, aspirin, etc...there are no clear structural/functional limitations.

(3) Guidance of the Specification:

The guidance of the specification as to "a small organic molecule" is limited to the ILK inhibitor compounds of US Patent 6214813, wortmannin, LY294002, and MC-5. Though the examiner notes that there is no description as to what MC-5 is, i.e. no chemical name or structure or reference where such information exists.

Compounds possessing other activities are not described in an enabling fashion.

(4) Working Examples:

The applicant provides working examples in example 3 and 4 of the specification for the compound MC-5. The ILK inhibitor compounds of US Patent 6214813 provide examples enabling the particular compounds therein, wortmannin and LY294002 are well know GSK1 inhibitors.

(5) State/predictability of the Art:

The state of the art regarding "a small organic molecule" and its subsequent testing as an inhibitor of ILK or any receptor is high. As the breadth of the term "a small organic molecule" is enormous encompassing a myriad of different structures.

(6) The Quantity of Experimentation Necessary:

The instant claims read on any small molecule. As discussed above, the specification fails to provide sufficient support for agents other than the ILK inhibitor compounds of US Patent 6214813, wortmannin, LY294002, and MC-5. Applicant fails to provide information sufficient to practice the claimed invention, absent undue experimentation (i.e. experimenting with all small organic compounds). Genetech, 108 F.3d at 1366 states that "a patent is not a hunting license. It is not a reward for search, but compensation for its successful conclusion" and "patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable."

Accordingly the claims are evaluated as being drawn to the a method for treating chronic inflammation comprising "a small organic molecule" limited to the ILK inhibitor compounds of US Patent 6214813, wortmannin, LY294002, and MC-5

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonjouklian et al. (US Patent 5378725), in view of Zhang et al. (Up-regulation of phophatidylinositol 3-kinase in psoriatic lesion, 1999, Chinese Medical Journal, vol. 112, iss. 12, pp. 1097-1100) and further in view of appellant's own admission.

Bonjouklian et al. teach, in col. 6 lines 10-60, that wortmannin is an inhibitor of phosphatidylinositol 3-kinase (a kinase involved in mitogenesis, cellular proliferation, and cellular differentiation) useful in the treatment of a variety of PI 3-kinase dependent biological processes including pain, diabetes, inflammation, platelet aggregation, vascular diseases, atherosclerosis (a chronic inflammatory disorder), and restenosis. Bonjouklian et al. teach in col. 7 lines 5-20, that wortmannin can be formulated into pharmaceutical compositions for parenteral, transdermal, rectal, nasal, intravenous or oral administration.

Bonjouklian et al. does not specifically teach the use of wortmannin in the treatment of psoriasis. Nor does Bonjouklian et al. teach wortmannin as an inhibitor of ILK.

Zhang et al. teach on page 1097 that PI 3-kinase is up regulated in psoriatic lesions (as compared to normal skin) and that the over-expression of PI 3-kinase may be related to the hyperproliferation of psoriatic keratinocytes.

The appellant states on page 5 of the specification:

"Because ILK activity is up regulated by the presence of the lipid [Ptdlns(3,4,5)P.sub.3], the activity of ILK can be manipulated by agents that affect cellular levels of [Ptdins(3,4,5)P.sub.3], or that block the binding of [Ptdlns(3,4,5)P.sub.3] to ILK. The amino acid sequence of ILK contains a sequence motif found in pleckstrin homology (PH) domains, which are involved in the binding of phosphatidylinositol phosphates. The activity of ILK is also down regulated by inhibiting the activity of PI(3) kinase, thereby decreasing cellular levels of [Ptdins(3,4,5)P.sub.3]. Agents of interest include inhibitors of PI(3) kinase, e.g. wortmannin, LY294002, etc. Physiologically effective levels of wortmannin range from about 10 to 1000 nM, usually from about 100 to 500 nM, and optimally at about 200 nM. Physiologically effective levels of LY294002 range from about 1 to 500 .mu.M, usually from about 25 to 100 .mu.M, and optimally at about 50 .mu.M. The inhibitors are administered in vivo or in vitro at a dose sufficient to provide for these concentrations in the target tissue."

It would have been obvious to of ordinary skill in the art at the time the invention was made to use wortmannin as a small organic molecule inhibitor of ILK in a method of

treating psoriasis, as wortmannin was shown to be an inhibitor of PI 3-kinase (Bonjouklian et al.), PI 3-kinase was up-regulated in psoriatic lesions (Zhang et al.), and PI 3-kinase inhibitors were known to down regulate the activity of ILK.

The motivation to use wortmannin as an inhibitor of ILK activity in the treatment of psoriasis is that wortmannin has been formulated as a pharmaceutical agent for both oral and dermal administration (Bonjouklian et al.), PI 3-kinase is known to be up-regulated in psoriatic lesions, wortmannin is an inhibitor of PI 3-kinase and inhibition of PI 3-kinase down regulates ILK. Thus one would be motivated to apply pharmaceutical compositions comprising wortmannin to treat psoriasis either as a direct inhibitor of PI 3-kinase or an indirect inhibitor of ILK.

The examiner respectfully points out the following from MPEP § 2112.01: "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

(10) Response to Argument

Appellant's arguments filed December 10, 2007 averring the instant claim is fully enabled are not convincing. The appellant further states that ILK inhibitors as well known prior to the instant invention and provides list of patent and non-patent literature

to support his view. However, the examiner notes that only two patents: US 6,214,813 and 6,219,447 and one non-patent literature: Persad et al. are directed to small molecules of ILK inhibitors and at the same time are having published date earlier than the instant invention. The invention has to be enabled at the time of filing. Therefore, it is not clear why the appellant concludes that small molecule ILK inhibitors are well-known prior to the instant invention. In fact, the state of the art with regard to ILK inhibitors is quite clear: although small molecule ILK inhibitors are known, they are not "well-known" as appellant asserted. The claim is also very broad as any small molecule ILK inhibitors are encompassed by the claim, and yet, there is no chemical, physical, or structural characteristics are defined in the instant specification. Only the small molecules are defined functionally, i.e., a small molecules that will inhibit ILK. Attention is directed to *General Electric Company v. Wabash Appliance Corporation et al* 37 USPQ 466 (US 1938), at 469, speaking to functional language at the point of novelty as herein employed: "the vice of a functional claim exists not only when a claims is "wholly" functional, if that is ever true, but when the inventor is painstaking when he recites what has already been seen, and then uses conveniently functional language at the exact point of novelty". Functional language at the point of novelty, as herein employed by Applicants, is further admonished in *University of California v. Eli Lilly and Co.* 43 USPQ2d 1398 (CAFC 1997) at 1406: stating this usage does "little more than outlin[e] goals appellants hope the recited invention achieves and the problems the invention will hopefully ameliorate". Appellant's functional language at the point of novelty fails to meet the requirements set forth under 35 USC 112, first paragraph. Claims employing

functional language at the point of novelty, such as Appellants', neither provide those elements required to practice the inventions, nor "inform the public during the life of the patent of the limits of the monopoly asserted" *General Electric Company v. Wabash Appliance Corporation et* supra, at 468. Claims thus constructed provide no guidance as to medicaments employed, levels for providing therapeutic benefit, or provide notice for those practicing in the art, limits of protection. Simply stated, the presented claims are an invitation to experiment, not reciting a specific medicament regimen useful for practicing the instant invention. The examiner notes that the employment of such molecules that little was known in the prior art, the instant specification is required to provide more guidance to the skilled artisan in order to practice the full scope of the invention without undue experimentation. Although the instant specification discloses information as to how to screen or identify the small molecule ILK inhibitors, it fails to disclose what such small molecules are in terms of chemical, physical, or structural characteristics. In other words, the instant specification discloses the method of screening the compounds without disclosing what they actually are. It is clear that in order to employ the ILK inhibitors in the instant method, one has to know what they are. Therefore, any compounds known to man would be a potential candidate for practicing the instant method. A very good example to illustrate the point would be wortmannin; although it is known in the art as a PI 3-kinase inhibitor, it actually can function as ILK inhibitors. Therefore, without testing the compound, the skilled artisan would not have known it is also an ILK inhibitor. It follows that without testing all of the compounds known to man, one of skilled in the art would not have found all of the compounds

encompassed by full scope of the claims as ILK inhibitors. Thus, it concludes that one of skill in the art would have to perform undue experimentation in order to found the compounds appropriate in practicing the herein claimed method.

Appellant also argues that working example is provided in the instant specification Examples 3 and 4. However, such arguments are not convincing. Only one example of small molecule of ILK inhibitor, MC-5, is set forth in the instant specification, thereby failing to provide sufficient working examples. It is noted that the example is neither exhaustive, nor define those structural classes of compounds required to practice the invention as herein claimed, as required by those guidelines set forth in *In re Wands*, supra. Appellant fails to set forth the criteria that structurally defines, or identifies, those compounds possessing ILK inhibiting activity. Additionally, Appellant fails to provide information allowing the skilled artisan to ascertain these compounds without undue experimentation. As for the predictability, in the appellant cited US patent 6,291,447, the compounds disclosed therein, even structurally similar, are having different affinity to different kinases (See Table 2 in col. 45-48). Therefore, even these compounds are structural similar, one still have to individually assess the compounds' activity with respect to certain kinases of interests. Therefore, absent sufficient guidance from the instant specification, the skilled in the art would be required to perform undue experimentation in order to practice the full scope of the invention.

The examiner believes the other factors in *In re Wands* have been addressed and discussed above.

As for the rejection under 35 USC 103(a), the instant invention is directed to a method of treating psoriasis by employing any ILK kinase inhibitors, which includes wortmannin. Appellant's arguments filed December 10, 2007 averring the cited prior art's failure to teach wortmannin as the ILK inhibitors in treating psoriasis. Accordingly, the appellant submits that the cited prior art does not teach the instant method of treating psoriasis. Such arguments are not convincing since the cited prior art does give motivation to the ordinary skill in the art to employ wortmannin in a method of treating psoriasis, regardless of whether wortmannin is known to be an ILK inhibitors or not. as discussed in the Final rejection, the examiner respectfully points out the following from MPEP § 2112.01: "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). Therefore, possessing the teachings of the cited prior art, one of ordinary skill in the in art would have been motivated to employ wortmannin in a method of treating psoriasis, absent evidence to the contrary.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/San-ming Hui/

Primary Examiner, Art Unit 1617

Conferees:

/Shengjun Wang/

Primary Examiner, AU 1617

/SREENI PADMANABHAN/

Supervisory Patent Examiner, Art Unit 1617